# Lecture Plan

## Name of Subject: Digital Signal Processing

## Class: B.Tech (ECE)

## Semester: 8th

| Unit | Name of Topic | Number of Lectures Required |
|---|---|---|
| 1 | Signal classifications, frequency domain representation, time domain representation, | 3 |
| 1 | representation of sequences by Fourier transform, properties of Fourier transform, discrete time random signals, energy and power theorems | 4 |
| 2 | Classification, properties, time invariant system, finite impulse Response (FIR) system, infinite impulse response (IIR) system | 6 |
| 3 | Sampling theorem, application, frequency domain representation of sampling, reconstruction of band limited signal from its samples. Discrete time processing of continuous time signals, changing the samplingrate using discrete time processing | 6 |
| 4 | Introduction, properties of the region of convergence, properties of the Z-transform, inversion of the Z-transform,applications of Z-transform. | 6 |
| 5 | Fundamentals of digital filtering, various types of digital filters, design techniques of digital filters : window technique for FIR, bi-linear transformation and backward difference methods for IIR filter design, | 6 |
| 5 | analysis of finite word length effects in DSP,FIR &IIR Filter structure-direct1,direct2,cascade and parallel, Application of DSP. | 6 |
| 6 | Introduction to multirate digital signal processing, sampling rate conversion, filter structures, multistage decimator and interpolators, digital filter banks. | 6 |